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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/743,654 | 12/22/2003 | Tadaaki Oikawa | FUJI:284 | 7596 |

7590 08/15/2005

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EXAMINER

RICKMAN, HOLLY C

| | |
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| ART UNIT | PAPER NUMBER |
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1773

DATE MAILED: 08/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/743,654 | Applicant(s) OIKAWA ET AL. | |
| | Examiner Holly Rickman | Art Unit 1773 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. The rejection of claims 1 and 3 under 35 U.S.C. 112, second paragraph, is withdrawn in view of Applicant's amendments.

3. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 is rendered indefinite by the use of the phrase "L10 type." It has been held that the addition of the word "type" to an otherwise definite expression extends the scope of the expression so as to render it indefinite. *Ex parte Copenhaver*, 109 USPQ 118 (Bd. App. 1955).

Claim Rejections - 35 USC § 102

4. The rejection of claims 1-14 under 35 U.S.C. 102(b) as being anticipated by Suzuki et al. (US 6068739) is withdrawn in view of Applicant's arguments.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-10 are rejected under 35 U.S.C. 103(a) as obvious over Suzuki et al. (US 6068739) in view of Haratani et al. (US 6420058).

Suzuki et al. disclose a magnetic recording medium having a (100) oriented MgO seedlayer disposed on a nonmagnetic substrate, a Cr based underlayer having a (100) orientation, a FePt or CoPt L1₀ oriented magnetic recording layer having alternating monatomic layers of Fe or Co and Pt (L1₀ structure has a monoatomic layer of Pt atoms bonded to a monoatomic layer of Fe or Co atoms). The structure is formed via a DC magnetron sputtering method at a substrate temperature of 400 C.

With respect to the thickness limitations of claim 1, Suzuki et al. meets these limitations because the reference teaches a structure having monatomic layers of Co or Fe alternating with monoatomic layers of Pt (i.e. L1₀ structure). It is well known in the art and recognized in Applicant's own specification that the thickness of a monatomic layer of Co is 1.77 Å, Fe is 1.43 Å, and Pt is 1.96 Å (see specification, paragraph 18 for example).

With respect to the limitations directed to forming the magnetic recording layer by "alternately laminating an iron or cobalt layer...and a platinum layer", Suzuki does not disclose the claimed process of alternately depositing individual layers of Pt with individual layers of Co

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or Fe. Instead the reference teaches sputtering the L1o layer using an alloy target. The examiner maintains that this process results in a product which is the same as that claimed. There is no evidence of record to establish that the claimed process limitations result in a materially different product.

Even though product-by-process claims are limited and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. “In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

With respect to claim 9, Suzuki et al. fail to disclose the claimed Ku value.

The reference teaches forming a structure that is substantially the same as that claimed by Applicant (i.e. same materials, layer thicknesses and crystalline orientations). Thus, one of ordinary skill in the art at the time of invention would have expected the structure taught by Suzuki et al. to inherently have the same perpendicular magnetic anisotropy as the claimed invention.

It has been held that where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the burden of proof is shifted to applicant to show that prior art products do not necessarily or inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC §102 or on prima facie obviousness under 35 USC §103, jointly or alternatively. *In re Best, Bolton, and Shaw*, 195 USPQ 430. (CCPA 1977).

It is noted that Suzuki et al. does not disclose the use of a protective overcoat and lubricant layer.

Haratani et al. teaches that it is known in the art to use a protective layer and lubricant on a magnetic recording layer to protect the medium from contact with a magnetic head (col. 4, lines 49-55).

It would have been obvious to one of ordinary skill in the art at the time of invention to add a protective layer and lubricant to the structure taught by Suzuki et al. in order to further protect the surface of the medium.

7. Claims 1-5 and 8-14 are rejected under 35 U.S.C. 103(a) as obvious over Araki et al. (US 6824817).

Araki et al. disclose a magnetic recording medium having a buffer layer with a thickness of 10-50 nm formed on a nonmagnetic substrate, a FePt L1₀ oriented magnetic recording layer having alternating monatomic layers of Fe and Pt. The structure is formed via a sputtering method at a substrate temperature of 120-240 C. The examiner maintains that heating of the substrate to a maximum of 240 C during deposition of the L1₀ layer necessarily results in some amount of residual heating subsequent to deposition of the magnetic layer as required by claim 13.

Araki et al. teaches that the thickness of the Fe layers is 0.14 nm and the thickness of the Pt layers is 0.2 nm (col. 5, lines 38-40). The reference also teaches that the total number of layer pairs of Pt and Fe may be as low as 10. With this number of layers, the total thickness of the FePt magnetic structure is 3.4 nm. The perpendicular magnetic anisotropy energy of the FePt

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layer taught by Araki et al. is from about 1.4 to 4.1×10^7 erg/cc (see paragraph 22 of specification for conversion).

The reference is silent with respect to the presence and/or deposition of a protective layer and a lubricant layer thereon.

Haratani et al. teaches that it is known in the art to use a protective layer and lubricant on a magnetic recording layer to protect the medium from contact with a magnetic head (col. 4, lines 49-55).

It would have been obvious to one of ordinary skill in the art at the time of invention to add a protective layer and lubricant to the structure taught by Araki et al. in order to further protect the surface of the medium.

8. Claims 15-16 are rejected under 35 U.S.C. 103(a) as obvious over Araki et al. (US 6824817) in view of Haratani et al. (US 6420058) and further in view of Ristau (US 6541131).

Araki et al. in view of Haratani et al. disclose all of the limitations of the claims except for the method limitations directed to deposition or sputtering from alternating targets.

Ristau teach that it is known in the art to sputter a L10 layer from a single target or co-sputter from separate elemental targets (col. 4, lines 59-65).

It would have been an obvious matter of design choice to use separate Fe and Pt elemental targets in the method taught by Araki et al. in view of the art recognized equivalence of sputtering using a single target and co-sputtering using separate targets.

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9. Claims 15-16 are rejected under 35 U.S.C. 103(a) as obvious over Araki et al. (US 6824817) in view of Haratani et al. (US 6420058) and further in view of Ristau (US 6541131).

Araki et al. in view of Haratani et al. disclose all of the limitations of the claims except for the method limitations directed to deposition or sputtering from alternating targets.

Ristau teach that it is known in the art to sputter a L10 layer from a single target or co-sputter from separate elemental targets (col. 4, lines 59-65).

It would have been an obvious matter of design choice to use separate Fe and Pt elemental targets in the method taught by Araki et al. in view of the art recognized equivalence of sputtering using a single target and co-sputtering using separate targets.

10. Claim 17 is rejected under 35 U.S.C. 103(a) as obvious over Araki et al. (US 6824817) in view of Haratani et al. (US 6420058) and further in view of Nemoto et al. (US 6815083).

Araki et al. in view of Haratani et al. disclose all of the limitations of the claims except for the use of a rotary cathode in the claimed sputtering method.

Nemoto et al. teach that it is known in the art to use a rotary cathode device in a sputtering process in order to mount multiple target cathodes for sputtering of an alloy magnetic film. The reference teaches that the use of a rotary cathode allows for simultaneous or alternate discharge sputtering methods (see col. 8, lines 50-67).

It would have been an obvious to one of ordinary skill in the art at the time of invention to use the rotary cathode technique described by Nemoto et al. in conjunction with the sputtering process taught by Araki et al. in order to obtain the flexibility of alternate discharge or simultaneous sputtering.

Response to Arguments

11. Applicant's arguments filed 5/19/05 have been fully considered but they are not persuasive.

Applicant's arguments with respect to the rejection of the claims under 35 USC 103 in view of Suzuki et al. are not persuasive. Applicant argues that Suzuki et al. fails to teach the limitation of claim 1 requiring that the magnetic recording layer "is formed by alternately laminating an iron or cobalt layer...and a platinum layer." However, this limitation is directed to a process limitation in an article claim. It does not patentably distinguish the present claims over the prior art because the structure of the magnetic film taught by the prior art appears to be substantially the same as that claimed. In the absence of evidence to the contrary, this grounds of rejection has been maintained.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Holly Rickman", with a stylized, flowing script.

Holly Rickman
Primary Examiner
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